CLAIMS

1   1.   A method for operating a server cluster where service requests to a first server are taken

2   over by a second server when a system operator initiates the takeover from the first server, and

3   both servers have storage means, the method comprising the steps of:

4   sending a first indication from the first server to the second server requesting the second

5   server to take over the operations of the first server;

6   sending a second indication from the second server to the first server requesting the first

7   server to shutdown; and

8   shutting down the first server by completing service requests that were being processed

9   when the second indication was received at said first server, and before said second server takes

10   over the storage means and operations of said first server.

1   2.   The method in accordance with claim 1 further comprising the step of sending a periodic

2   request from the second server to the first server to stay shut down, after the first server has shut

3   down.

1   3.   The method in accordance with claim 1 wherein said servers issues periodic signals to

2   each other indicating they are functioning at some level, and said second server does not issue

3   said second indication to said first server when the periodic signals issued by said first server are

4   absent, and said second server instead issues a signal to immediately takeover the storage means

5   and operations of said first server..

1   4.   A method for operating a server cluster where service requests to a first server are taken

2   over by a second server when a system operator initiates the takeover from the second server,

3   and both servers have storage means, the method comprising the steps of:

4   sending a second indication from the second server to the first server requesting the first

5   server to shutdown; and

6   shutting down the first server by completing service requests that were being processed when the

7   second indication was received at said first server, and before said second server takes over the

8   storage means and operations of said first server

1   5.   The method in accordance with claim 1 further comprising the step of monitoring the

2   status of the first server to detect any operational faults prior to sending of the first indication to

3   the second server in the event an operational fault is detected.

1   6.   The method in accordance with claim 1 further comprising the step of letting the first

2   server complete certain functions it is performing at the time the operational fault is detected

3   before it shuts down.

1   7.   The method in accordance with claim 6 further comprising the step of sending a periodic

2   request from the second server to the first server to stay shut down, after the first server has shut

3   down.

1   8.   A method for operating a first server to provide backup service to a second server when

2   the first server detects an operational fault, the method comprising the steps of:

3   receiving a first request at the second server requesting the second server to take over the

4   operations of the first server when the first server has detected an operational fault that will

5   require it to shut down;

6   permitting the first server to complete certain functions it is performing at the time the

7   operational fault is detected before it shuts down; and

8   taking over the functions of the first server at the second server after the first server has

9   shut down.

1   9.   The method in accordance with claim 8 further comprising the step of monitoring the

2   operational status of the first server to detect any operational faults and cause sending of the first

3   request to the second server to take over the operations of the first server in the event an

4   operational fault is detected on the first server.

1   10.   The method in accordance with claim 9 further comprising the steps of:

2   determining if the second server can provide backup service to the first server; and

3   requesting the first server to shut down if the second server can provide backup service to

4   the first server.

1   11.   The method in accordance with claim 10 further comprising the step of receiving an

2   indication at the second server from the first server indicating the type of operational fault

3   detected by the first server.

1 12.   The method in accordance with claim 11 further comprising the step of receiving a

2 periodic request at the first the first server sent from the second server for the first server to stay

3 shut down.

1 13.   The method in accordance with claim 12 further comprising the step of rebooting the first

2 server after the detected operational fault has been cured.

1 14.   Apparatus for transferring service requests from a first server to a second server in a

2 cluster of servers when the first server has a fault therein, said apparatus comprising:

3   first means in said first server for monitoring the operation of said first server, said first

4 monitoring means generating a first fault signal when it is determined that said first server has a

5 fault therein, said first fault signal being sent to said second server; and

6   wherein when said second server receives said first fault signal it permits said first server

7 to complete existing service request that are being processed by said first server and then takes

8 over and processes further service requests directed to said first server.

1 15.   Apparatus for transferring service requests from a first server to a second server in a

2 cluster of servers when the first server has a fault therein, and said first server sends a fault signal

3 to said second server upon there being a fault in said first server, said apparatus comprising:

4   first means in said second server for receiving said fault signal from said first server; and

5   wherein when said second server receives said first fault signal it permits said first server

6 to complete existing service request that are being processed by said first server and then takes

7 over and processes further service requests directed to said first server.

1   16.   The apparatus in accordance with claim 15 further comprising memory means in said

2   second server, said first server generates a compilation of the status of service requests being

3   processed by said first server and sends said compilation to said second server to be stored in

4   said memory means thereat, said compilation being used by said second server to take over

5   processing of service requests directed to said first server in an orderly fashion.

1   17.   The apparatus in accordance with claim 16 wherein after said second server takes over

2   processing of service requests directed to said first server, said second server transmits stay dead

3   signals to said first server causing it not to attempt to commence processing new service

4   requests.

1   18.   The apparatus in accordance with claim 17 wherein said first and said second servers are

2   file servers.

1   19.   A computer readable medium containing executable instructions for providing backup

2   service between a first server and a second server operating in a cluster mode when the first

3   servers experiences a fault that will cause it to shut down, the executable program instructions

4   comprising program instructions for:

5   sending a fault signal from the first server to the second server;

6   determining if the second server can provide backup service to the first server;

7   requesting the first server to shut down if the second server can provide backup service to

8   the first server; and

9   taking over the functions of the first server by the second server after the first server has

10   complete current operations and has shut down.

1   20.   Apparatus for operating a first server to receive backup service from a second server

2   when the first server detects an operational fault, said apparatus comprising:

3   means for sending a first indication from the first server to the second server when the

4   first server detects the operational fault that will require it to shut down;

5   means for sending a second indication from the first server to the second server

6   indicating the type of operational fault detected by the first server;

7   means for receiving a shutdown command from the second server at the first server if the

8   second server can provide backup service to the first server; and

9   means for shutting down the first server.

1   21.   Apparatus for operating a first server to provide backup service to a second server when

2   the first server detects an operational fault, said apparatus comprising:

3   means for receiving a first request at the second server from the first server requesting the

4   second server to take over the operations of the first server when the first server has detected an

5   operational fault that will require it to shut down;

6   means for permitting the first server to complete certain functions it is performing at the

7   time the operational fault is detected before it shuts down; and

8   means for taking over the functions of the first server at the second server after the first

9   server has shut down.

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